

STUDIES OF NEOTROPICAL CADDISFLIES LVIII: NEW SPECIES OF THE
GENUS *OCHROTRICHIA* MOSELY (TRICHOPTERA: HYDROPTILIDAE)
FROM PERU

OLIVER S. FLINT JR. AND JOAQUIN BUENO-SORIA

(OSF) Department of Entomology, National Museum of Natural History, Smithsonian Institution, Washington, DC 20560-0105, USA; (JBS) Instituto de Biología, Universidad Nacional Autónoma de México, Apdo. Postal 70-153, México 04510, D.F., México

Abstract.—Nine new species of the genus *Ochrotrichia* from Peru are described, diagnosed and figured: *O. intortilis*, *O. oblecta*, *O. flexura*, *O. bipartita*, *O. calcarata*, *O. hamatilis*, *O. machiguenga*, *O. manuensis*, and *O. campanilla*.

Key Words: *Ochrotrichia*, Trichoptera, Hydroptilidae, caddisfly, new species, Peru

The microcaddisfly genus *Ochrotrichia* Mosely is widely distributed from Canada south through Central and South America as far south as 13°S in central Peru and over the Greater and Lesser Antilles. Four species have been described from Dominican amber (Wells and Wichard 1989, Wichard 1981). A separate subgenus, *Paratrichia*, has been described from Uruguay (Angri-sano 1995). Although the first North American species was described in the last century (Hagen 1861), and West Indian and Mexican species in the early part of this century (Mosely 1934, 1937), the first South American species was not made known until 1981 (Flint 1981). This decade has seen 7 more species described from Brazil, Colombia, and Ecuador (Bueno and Santiago 1992). We now add another 9 species from one andean transect, including the Amazonian lowland in Peru. It is clear that many more species remain to be discovered throughout Amazonas and the wetter Andes in South America, perhaps as far south as the Tropic of Capricorn.

The holotypes designated herein are the property of the Museo de Historia Natural "Javier Prado" (MHNJP), Universidad Na-

cional Mayor de San Marcos, Lima, Peru, but are currently on loan to the National Museum of Natural History (NMNH), Smithsonian Institution, Washington, D.C., U.S.A. Paratypes will be divided between MHNJP, NMNH, Instituto de Biología, Universidad Nacional Autónoma de México (IBUNAM), México, and the entomological collection, University of Minnesota, St. Paul (UMSP), U.S.A.

LOCALITIES

This material was collected at only a few localities in Peru in the departments of Cuzco and Madre de Dios. There were two stops on the road between Paucartambo and Pilcopata along the eastern slope of the Andes in a transition area between the andean montane wet forest and andean tropical wet forest. As well, specimens were collected at various sites close to the Pakitza guard station on the banks of the Río Manu in the Manu Reserve Zone of the Manu Biosphere Reserve. The full data for each of these sites is listed below and only an abbreviated citation will be given in the material examined section.

1) Department Cuzco, Province Paucar-

tambo, Puente San Pedro at km 152, 44 km (road) W of Pilcopata, 13°03.30'S, 71°32.78'W, elevation about 1,450 m.

2) Department Cuzco, Province Paucartambo, Quitacalzón at km 164, 32 km (road) W of Pilcopata, 13°01.57'S, 71°29.97'W, elevation about 1,050 m.

3) Department Madre de Dios, Province Manu, Pakitza Posta Vigilante and environs, 65 km (river distance) above Manu, station at 11°56.78'S, 71°17.00'W, elevation 356 m.

DESCRIPTIONS

Ochrotrichia intortilis Flint and Bueno, new species

(Figs. 1–2)

Ochrotrichia (*O.*) n. sp. 1: Flint 1996:398.

Diagnosis.—On the basis of the structure of the tenth tergum, i.e., a strong basal spine, a long spine-like process on the right side, and complex central lobe, this species is a member of the *tarsalis* group, most similar to *Ochrotrichia oblongata* Bueno and Santiago (1992). However, *O. intortilis* can be separated from that species by the very heavy, basal spine and the long, curved, right spine that arises basoventrally and the elongate central lobe of tenth tergum.

Adult.—Length of forewing, 3 mm. Color silvery gray; antenna and face with cream-colored hair; forewing silvery gray, with the anterior border covered with a dark band of hair. *Male genitalia*: Ninth tergum capsule like, produced anteriorly; sternum with anteroventral angle produced anteriorly. Tenth tergum with a single elongate, basodorsal spine to right of midline: right side with a long, slender, twisted spine arising basoventrally; mesally with an elongate, convoluted lobe curved to the left of midline. Inferior appendages long, with a high, basal shoulder, apex rounded; with a row of black, peglike setae along ventral margin and on midbasal ridge, apex with a large cluster of such spines; basoventrally each

appendage with a large, pointed lobe produced mesally. Phallus slender, threadlike.

Material.—*Holotype*, ♂: PERU; Puente San Pedro, 2–3 Sep. 1988, O. S. Flint & N. Adams (MHNJP). *Paratypes*: Same data, but 24 June 1993, R. Blahnik & M. Pesador, 2 ♂, 1 ♀ (NMNH, UMSP).

Etymology.—From Latin: “intortilis,” twisted, contorted; in allusion to the tenth tergum.

Ochrotrichia obtecta Flint and Bueno, new species

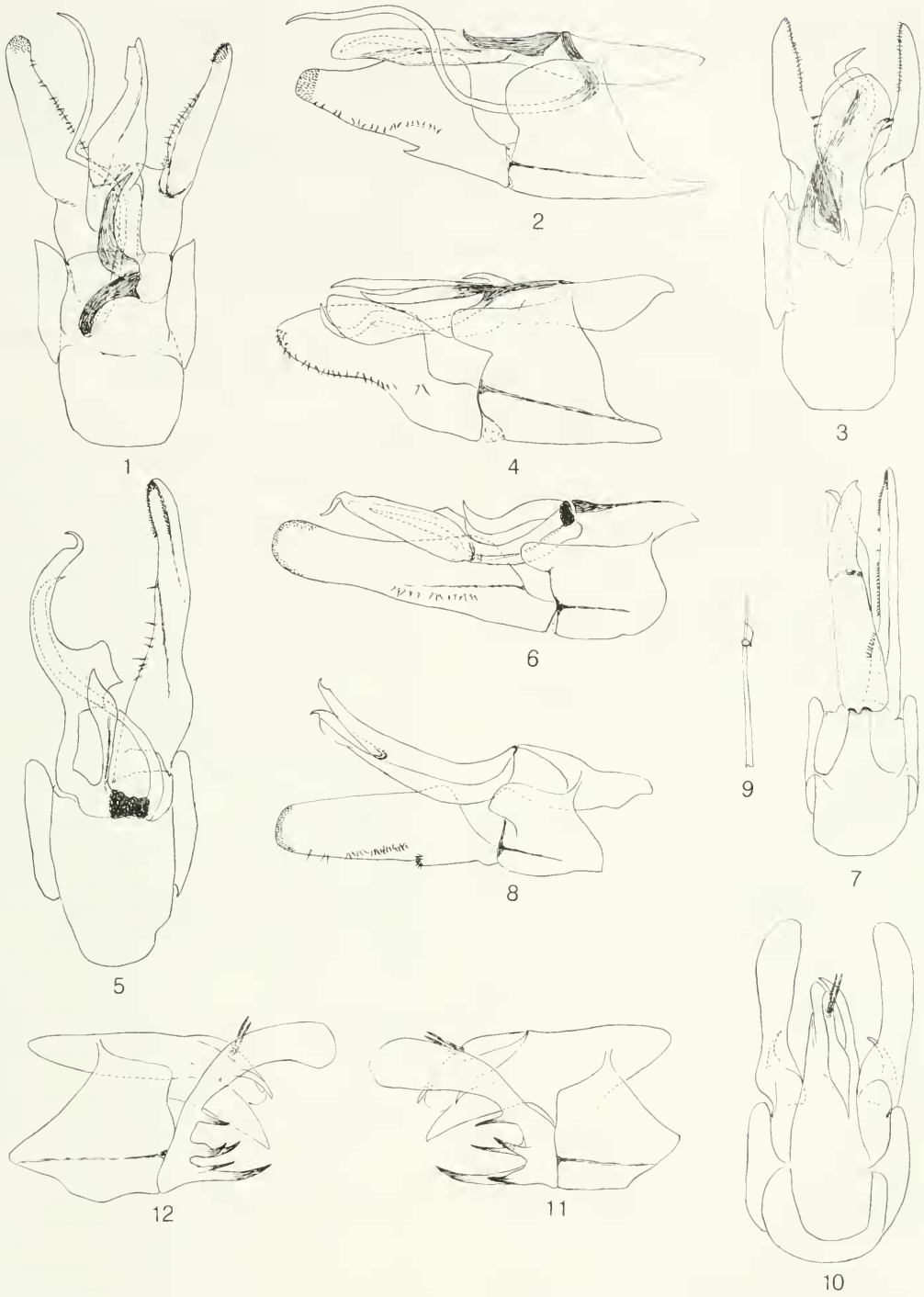
(Figs. 3–4)

Ochrotrichia (*O.*) n. sp. 2: Flint 1996:398.

Diagnosis.—This species is another member of the *tarsalis* group, as is the preceding species, but very different in the structure of the genitalia. *Ochrotrichia obtecta* is most closely related to *O. tarsalis* (Hagen) (1861) itself, as shown by the apically twisted spine concealed in the tenth tergum. It is easily distinguished from this and all other species by the second strong spine on the right side that is overlain by a thin plate of the tenth tergum.

Adult.—Length of forewing 3 mm. Color silvery gray; antenna and face with cream-colored hair; forewing silvery gray but mostly denuded in type, with the anterior border covered with dark hair. *Male genitalia*: Ninth tergum capsule like, produced anteriorly. Tenth tergum with a small basodorsal spine, a long, basolateral spine on right curved to midline and covered by a thin dorsal plate; a long basolateral spine on right curving beneath central complex and ending in a spiral twist; central complex broad and deep, covering both right spines. Inferior appendages long, with a high, basal shoulder, apex rounded; with a row of black, peglike setae along ventral margin and on midbasal ridge, apex with a dense row of such spines. Phallus slender, threadlike, apex slightly enlarged, crescentic.

Material.—*Holotype*, ♂: PERU; Puente San Pedro, 2–3 Sep. 1988, O. S. Flint & N.



Figs. 1-12. *Ochrotrichia*. 1-2, *O. intortilis*. 1, Male genitalia, dorsal. 2, Same, right lateral. 3-4, *O. obtecta*. 3, Male genitalia, dorsal. 4, Same, right lateral. 5-6, *O. flexura*. 5, Male genitalia, dorsal. 6, Same, right lateral. 7-9, *O. bipartita*. 7, Male genitalia, dorsal. 8, Same, right lateral. 9, Tip of phallus. 10-12, *O. calcarata*. 10, Male genitalia, dorsal. 11, Same, right lateral. 12, Same, left lateral.

Adams (MHNJP). *Paratypes*: Same data, but 30–31 Aug 1989, N. Adams et al., 1 ♂ (NMNH); same data, but, stream, 3 km E Puente San Pedro, 30 Aug 1998, 1 ♂, 2 ♀ (MHNJP, NMNH).

Etymology.—Derived from latin: “obtecta,” covered over; in reference to the spines of the tenth tergum.

***Ochrotrichia flexura* Flint and Bueno,
new species**
(Figs. 5–6)

Ochrotrichia (*O.*) n. sp. 8: Flint 1996:399.

Diagnosis.—On the basis of the presence of several processes of the tenth tergum and by the shape of the inferior appendages, *Ochrotrichia flexura* is considered a member of the *tenanga* group. However, *O. flexura* may be separated from all species, by the processes of the tenth tergum: the large, dorsomesal spine and by the long, curved, left processes enclosed by the right process which is enlarged at midlength and ends in a twisted tip.

Adult.—Length of forewing 2 mm. Color dark brown; antenna and face with cream-colored hair; forewing dark brown with slightly paler markings. *Male genitalia*: Ninth tergum capsule-like, produced anteriorly. Tenth tergum in dorsal view, with a large, dorsomesal spine, compressed basally, apically broadened, slightly curved; elongate left process curved to right across midline and slightly recurved to left apicad, enclosed in sheath like right process for apical half; right process narrow basally giving rise to a greatly expanded midsection with apical half curved to left terminating in a hooked apex, internally concave and enclosing left lateral process; basally with a section between mesal and left processes strongly darkened. Inferior appendages symmetrical; in lateral view very long, slender, slightly widened subbasally, apex rounded; apex and ventral margin with a row of black peglike setae. Phallus long and threadlike.

Material.—*Holotype*, ♂: PERU; Pakitza, trail 2, marker 15, Quebrada Trompetero, 6

Jul 1993, R. Blahnik & M. Pescador (MHNJP). *Paratypes*: Same data, 1 ♂ (NMNH); same, but 3 Jul 93, 1 ♂ (UMSP); same, but trail 2, 1st stream, malaise trap, day & night collection, 14–23 Sep 1988, O. Flint & N. Adams, 4 ♂ (MHNJP, NMNH, UMSP).

Etymology.—From the Latin: “flexura,” a bending, turning; in reference to the bent apical processes of the tenth tergum.

***Ochrotrichia bipartita* Flint and Bueno,
new species**
(Figs. 7–9)

Diagnosis.—*Ochrotrichia bipartita* is clearly a member of the *aldama* group, quite closely related to *O. aldama* Mosely (1937) itself. However, *O. bipartita* can be distinguished from that species by the narrow, elevated, apical section of the ninth tergum, by the longer inferior appendages with a spine bearing lobe on the basal half of the ventral margin, and the details of the shape of the two processes of the tenth tergum.

Adult.—Length of the forewing, 2.5 mm. Color dark brown; antenna cream colored; forewing with a pale, transverse band at midlength and in spots around apex of wing. *Male genitalia*: Ninth tergum encapsulated and produced anteriorly, posterior half much narrowed apicad; in lateral view with posterior half strongly elevated apicad. Tenth tergum elongate, divided beyond midlength into two almost equal processes, right process slightly curved left and vice versa and both ending in a small hook. Inferior appendages symmetrical, in lateral view, elongate, apex rounded, at third of length bearing a small, ventromesal lobe with many, black, peglike setae; with a row of black peglike seta around apex, along ventral margin and midbasal ridge. Phallus threadlike, widened basally; subapically with a small, curled spine beyond which extends a slender, straight, short tube.

Material.—*Holotype*, ♂: PERU; stream, 50 m E Quitacalzón, 26 Jul 1993, R. Blahnik & M. Pescador (MHNJP). *Paratypes*: Same data, 5 ♀ (MHNJP, NMNH, UMSP).

Etymology.—From the Latin: “partita,” a piece, plus “bi-” prefix for two; in reference to the two parted tenth tergum.

***Ochrotrichia calcarata* Flint and Bueno,
new species**
(Figs. 10–12)

Ochrotrichia (*O.*) n. sp. 3: Flint 1996:398.

Diagnosis.—This is a member of the *ar-ranca* group, very close to *Ochrotrichia yanayacuana* Bueno and Santiago (1992). However, *O. calcarata*, can be separated from that species by the presence of a small spine on the right side of the tenth tergum just above the ventral scoop, and by the size and positions of the basoventral spines on the inferior appendages.

Adult.—Length of forewing 2.5 mm. Color in alcohol dark brown. *Male genitalia*: Ninth tergum capsule like, barely expanded anteriorly. Tenth tergum with a slightly curved, dorsal process bearing dorsally two, large, black setae; left side with an slender spine lying along dorsal margin of ventral lobe; ventrally with a scooplike lobe whose tip is pointed in lateral aspect; left side with a slender process apically approximate to central process. Inferior appendages with an elongate clavate dorsal lobe; basoventrally with 5, black-tipped spurs, ventromesal one being longest and arced mesally in ventral aspect. Phallus long, threadlike.

Material.—*Holotype*, ♂: PERU; Puente San Pedro, 2–3 Sep. 1988, O. S. Flint & N. Adams (MHNJP).

Etymology.—From the latin: “calcar,” a spur; in reference to the spurs from the basal region of the inferior appendages.

***Ochrotrichia hamatilis* Flint and Bueno,
new species**
(Figs. 13–14)

Ochrotrichia (*O.*) n. sp. 6: Flint 1996:398.

Diagnosis.—*Ochrotrichia hamatilis* is considered a member of the *xena* group because of the overall shape of the male genitalia, especially the tenth tergum and in-

ferior appendages, and appears most closely related to *O. gurneyi* Flint (1964). *Ochrotrichia hamatilis* may be distinguished from that species and all others by the shape and structure of the tenth tergum and the presence of a basal hooked appendage on the left inferior appendage.

Adult.—Length of the forewing, 2.5 mm. Color, fuscous; face and antenna with cream-colored hair; forewing fuscous, with a narrow, pale transverse band at midlength. *Male genitalia*: Ninth segment entire with narrow dorsal connection, not produced anteriorly; in lateral view almost triangular, posterior margin rounded, not produced. Tenth tergum in dorsal view elongate, asymmetrical, tapering apicad; subapically with a small, right lateral process, tip hooked laterad; ventrobasally with a lightly sclerotized plate, with apical margin sinuate, in lateral aspect with apicoventral angle of this plate pointed ventrad. Inferior appendages in lateral view, elongate, almost parallel-sided, apex rounded; with a row of black peglike seta around apex, along ventral margin and midbasal ridge; left appendage with a hooklike subbasal process, right appendage with only a minute point. Phallus slender, threadlike apicad; constricted subapically with a short point extending from constriction.

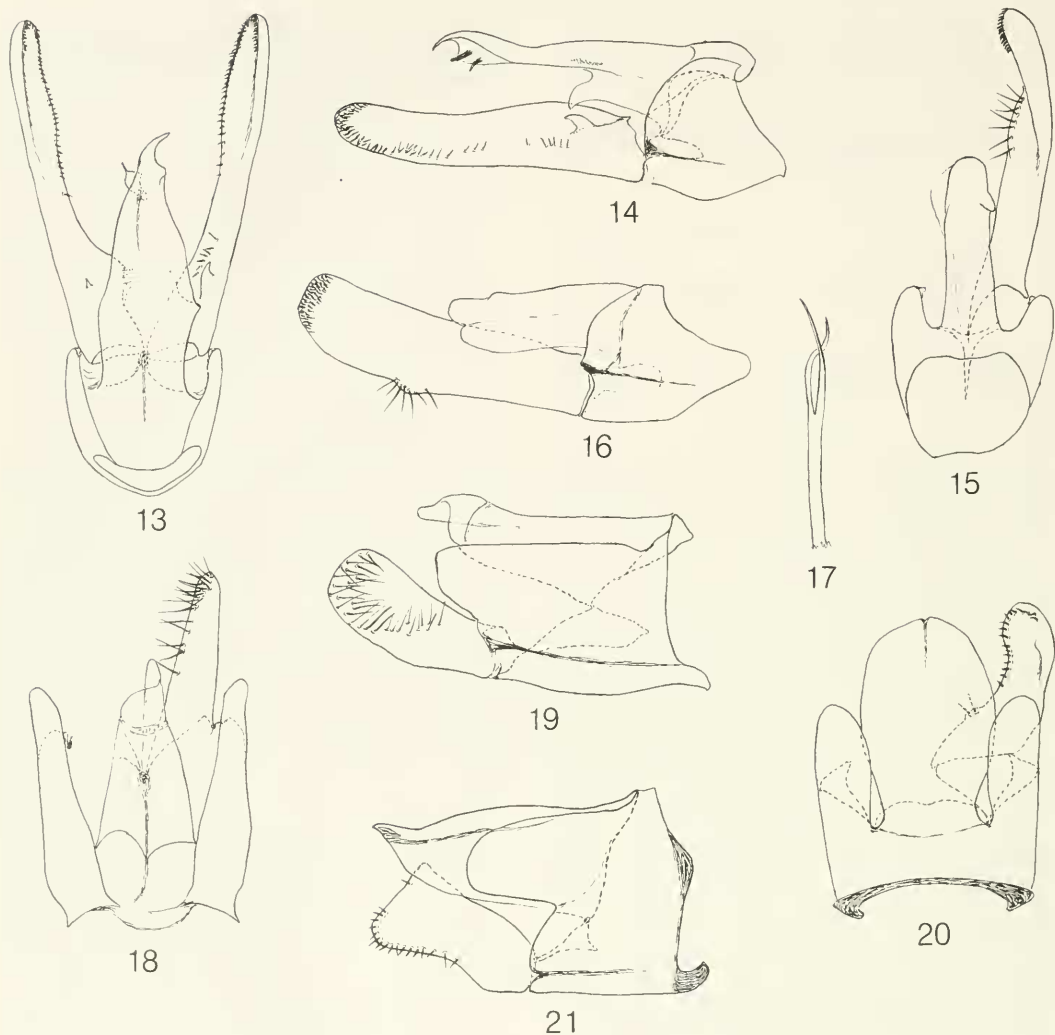
Material.—*Holotype*, ♂: PERU; Pakitza, trail 2, first stream, malaise trap, day and night collection, 14–23 Sep 1988, O. Flint & N. Adams (MHNJP). *Paratypes*: Same data, 8 ♀ (MHNJP, NMNH, UMSP).

Etymology.—Latin diminutive of “hamus,” a hook or barb; in reference to the apical hook of the tenth tergum.

***Ochrotrichia machiguenga* Flint and
Bueno, new species**
(Figs. 15–17)

Ochrotrichia (*O.*) n. sp. 7: Flint 1996:398.

Diagnosis.—This species is member of the *xena* group that presents some similarities to *Ochrotrichia glabra* Bueno and Santiago (1997). However, *O. machiguenga*



Figs. 13-21. *Ochrotrichia*. 13-14, *O. hamatilis*. 13, Male genitalia, dorsal. 14, Same, right lateral. 15-17, *O. machiguenga*. 15, Male genitalia, dorsal. 16, Same, right lateral. 17, Tip of phallus. 18-19, *O. manuensis*. 18, Male genitalia, dorsal. 19, Same, right lateral. 20-21, *O. campanilla*. 20, Male genitalia, dorsal. 21, Same, right lateral.

can be recognized by the anterior margin of the ninth segment in lateral view being strongly produced at midheight rather than ventrally, and the tenth tergum having a small knob on the left side subapically.

Adult.—Length of forewing, 2 mm. Completely cleared and in alcohol: color unknown. *Male genitalia*: Ninth segment entire, anterior margin produced mesally, tergum continuous. Tenth tergum in dorsal view a simple, elongate, hoodlike lobe, with

small knob subapically on left side; in lateral aspect with the apex rounded. Inferior appendages symmetrical; in lateral view parallel-sided, apex rounded; with a cluster of black peglike setae along apex, with several more elongate setae near midbasal ridge which is just beyond midlength. Phallus long, with the apical portion divided into two, slightly curved filaments.

Material.—*Holotype*, ♂: PERU; Pakitza, trail 1, marker 14 (1st Stream), malaise trap,

night collection, 19–23 Sep 1989, N. Adams et al. (NMNH).

Etymology.—The name of one of the indian tribes indigenous to the region.

***Ochrotrichia manuensis* Flint and
Bueno, new species**
(Figs. 18–19)

Ochrotrichia (*O.*) n. sp. 5: Flint 1996:398.

Diagnosis.—This species is another member of the *xena* group, clearly related to *Ochrotrichia campanilla* n. sp., *O. flagellata* Flint (1972), and others of the group. It can be distinguished from those species by the much more elongate ninth segment, the odd apical structure of the tenth segment, and in the shape of the inferior appendages, with their much longer than usual spines.

Adult.—Length of forewing, 2 mm. Color dark brown; antenna and face with cream-colored hair; forewing almost uniformly fuscous. *Male genitalia*: Ninth segment entire with narrow dorsal connection, not produced anteriorly; in lateral view very long, with small dorsolateral lobe from posterior margin. Tenth tergum an elongate lobe, tapering apically; apex set-off from basal portion and produced on left side. Inferior appendages in lateral view ellipsoid, apex rounded; with a row of elongate, pointed, black setae around apex, and mid-basal ridge. Phallus very long and thread-like.

Material.—*Holotype*, ♂: PERU; Pakitza, trail 2, first stream, malaise trap, day and night collection, 14–23 Sep. 1988 O. Flint & N. Adams (MHNJP). Paratypes: Same data, 1 ♂ (NMNH); same, but night collection, 3 ♂, 4 ♀ (MHNJP, NMNH, UMSP); same, but day collection, 1 ♀ (NMNH); same, but, trail 1, marker 14 (first stream), malaise trap, 19–23 Sep 1989, N. Adams et al., 1 ♂ (NMNH); same, but trail 2, marker 15, Quebrada Trompetero, 6 Jul 1993, R. Blahnik & M. Pescador, 1 ♂, 1 ♀ (NMNH); same, but trail 1, marker 13, Quebrada Pajil-Picoflor, 2 Jul 1993, 1 ♀ (UMSP).

Etymology.—From the locality “Manu,” plus Latin suffix “-ensis,” inhabitant of.

***Ochrotrichia campanilla* Flint and
Bueno, new species**
(Figs. 20–21)

Ochrotrichia (*O.*) n. sp. 4: Flint 1996:398.

Diagnosis.—This species belongs to the *xena* group, very closely related to the Panamanian *O. flagellata* Flint (1972). From this species, it is easily separated by the much larger dorsolateral lobes from the posterior margin of the ninth segment, the more sharply angled dorsal margin of the inferior appendages, and the lack of the apical appendage on the phallus.

Adult.—Length of forewing, 2 mm. Color dark brown; head and antenna with dark brown hair; forewing mostly denuded but appearing dark brown apparently with some paler maculation, fringe at wing tip with a white spot. *Male genitalia*: Ninth segment entire dorsally, not produced anteriorly; with a large dorsolateral lobe from posterior margin. Tenth tergum in dorsal view a large, rounded lobe, with apex bearing a short, dark mark, no spines; in lateral aspect apex produced in an acute, dorsal angle. Inferior appendages in lateral view short, almost bell-shaped, with angulate margin posterodorsally; apical and posteroventral margin with a row of black, peglike setae. Phallus constricted at about 60% of length with both a short pointed process from constriction and a long, slender tubule (possibly with a small point subapically).

Material.—*Holotype*, ♂: PERU; Pakitza, trail 1, 1st stream, malaise trap, day collection, 9–14 Sep 1988, O. Flint & N. Adams (MHNJP). Paratypes: Same data, 4 ♂ (IBUNAM, NMNH, UMSP); same, but trail 1, marker 14 (1st stream), malaise trap, night collection, 250 m, 19–23 Sep 1989, N. Adams et al., 1 ♂ (NMNH).

Etymology.—From the Spanish: little bell, “campanilla”; because of the bell-like shape of the inferior appendages in lateral view.

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